State of Arkansas - SHARE

Arkansas Coordinator for Health Information Technology

Request for Information (RFI) for Arkansas Health Information Exchange

MEDNET Team Collaborative Response to Arkansas Health Information Exchange RFI

May 5, 2010

May 5th, 2010

The Arkansas State Health Alliance for Records Exchange (SHARE)
Request For Information (RFI)
Attention: Alison Nicholas
Via Email Submission

Dear Ms. Nicholas:

Please find attached the completed collaborative RFI response from The MEDNET Team for Arkansas Health Information Exchange and SHARE. MEDNET is leading a collaborative response to this RFI with a team of experienced HIE service providers, including RelayHealth, Public Consulting Group (PCG), and Hielix, and hereto will refer to this team as the MEDNET Team (or Team).

The MEDNET Team has HIE experts who helped the States of Arizona, Minnesota, Missouri, Michigan, New Jersey North Dakota, and Maryland design successful HIE efforts in these respective states. The MEDNET team has architected, designed, and implemented multiple Health Information Exchange projects; additionally the Team has HIE experts who have direct, hands-on experience working with Health Information Exchange (HIE) at the Federal, State, and Local/Regional level.

The MEDNET Team has been awarded contracts to design and architect the statewide Health Information Exchange for the State of North Dakota as well as the State of Mississippi (both statewide HIE initiatives). Additionally, MEDNET was awarded and is implementing multiple HIE Social Security Administration contracts for bi-directional clinical data exchange over NHIN.

The MEDNET Team is currently working with and familiar with HIE activities in numerous other states including California, Florida, Wisconsin, West Virginia, Illinois, Georgia, Oklahoma, Colorado, and Michigan. In addition, the MEDNET Team participates and serves on numerous national committees that coordinate state activities including HiMSS, ONC, and HITSP. We are familiar with the research published by several national organizations in this field including the eHeatlthInitiative, NGA, HiMSS, AHIC, and the Markle Foundation.

The Team has integrated multiple **existing** applications and services to create The MEDNET **HIE Services Stack**, a robust, secure environment of core HIE functionality and applications for Health Information Exchange. Additionally, core Team members Public Consulting Group (PCG) and Hielix bring specific expertise in HIE, HIT and Medicaid operational planning, sustainability planning and alignment, project management, business process improvement, meaningful use, quality

assurance, software testing, security testing and in depth experience aligning HIE with state Medicaid programs and systems.

If there are additional questions or specifications that are required in the decision making process, please let me know. Thank you for your time and consideration for this RFI.

Best regards,

Chris Smith
Director, Business Development
MEDNET
333 Washington Avenue North Suite 208
Minneapolis, MN 55401
612-435-7603
chris.smith@mednetworld.com

Frequently Used Acronym Table:

ARRA	American Reinvestment and Recovery Act
CCD	Continuity of Care Document
CMS	Centers for Medicare and Medicaid
DHHS	Department of Health and Human Services
DoD	Department of Defense
DURSA	Data Use and Reciprocal Support Agreement
EHR	Electronic Health Record
eMPI	Enterprise Master Patient Index
EMR	Electronic Medical Record
FHA	Federal Health Architecture
HHS	Department of Health and Human Services
HIE	Health Information Exchange
HIPAA	Health Information Portability and Accessibility Act
HISPC	Health Information Security and Privacy Collaboration
HIT	Health Information Technology
HITECH	Health Information Technology for Economic and Clinical Health
HL7	Health Level 7
MITA	Medicaid Information Technology Architecture
MMIS	Medicaid Management Information System
NHIN	Nationwide Health Information Network
ONC	Office of the National Coordinator
REC	Regional Extension Centers
RFP	Request for Proposal
RHIO	Regional Health Information Organization
RLS	Record Locator Service
SMHP	Medicaid State Health Information Technology Plan
SSA	Social Security Administration
VA	Veterans Administration

5.1 Mandatory Response Requirements:

1. Name and Category of Respondent:

MEDNET is the prime respondent to this RFI, in partnership with RelayHealth, Public Consulting Group (PCG), and Hielix. MEDNET is an HIE vendor (HIE software and services), and has assembled a team of HIE experts with software, services, consulting, outreach, and support experience. More about The MEDNET Team can be found in the Appendix at the end of this document.

2. Name of Vendor Representative:

Chris Smith
Director, Business Development
MEDNET
333 Washington Avenue North Suite 208
Minneapolis, MN 55401
612-435-7603
chris.smith@mednetworld.com

3. Summary Description of Solution

MEDNET, in partnership with RelayHealth, Public Consulting Group (PCG) and Hielix, has assembled a comprehensive Health Information Exchange solution, including HIE software and applications, HIE and meaningful use consulting, provider training and outreach services, process improvement, project management, and state Medicaid planning and alignment services.

The MEDNET Team has collaborated to provide a scalable, flexible, secure, standards-based, interoperable, service-orientated platform with associated consulting, project management, and services for Health Information Exchange. The MEDNET Team has a complete offering of HIE services and solutions, including clinical and administrative transactions, as well as Medicaid alignment.

An important aspect of HIE interoperability and meaningful use is connecting to, and full compliance with, the Nationwide Health Information Network (NHIN) as well as current and developing standards from Health and Human Services, the Office of the National Coordinator (ONC) and the Federal Health Architecture (FHA). Installation and utilization of a certified and compliant NHIN Gateway, as well as standards-compliant systems and solutions, will ensure that SHARE can link with other NHIN HIEs, states, and Federal Agencies. Interoperability with other State and Federal networks, as well as other HIEs, will support the SHARE in meeting the criteria for Meaningful Use. The MEDNET Team has experience and expertise in the domain of NHIN and The Federal Health Architecture.

The MEDNET Team has integrated multiple *existing* vendor solutions and applications together to provide the MEDNET **HIE Services Stack**, a robust, secure, single-sign on environment of applications and services for Health Information Exchange. The HIE Services Stack is a group of hosted HIE applications, protected by Federated Identity Management (with military-grade encryption and single sign-on service), that can easily be rolled out and utilized by rural and metropolitan providers alike.

The HIE Services Stack is composed of two core components: a web based portal component for those with no EMR or needing a lightweight experience; and a direct, EMR integrator component (called the MEDNET HIE Gateway, or EDGE Server), for those with an existing EMR system (or database), who wish to consume some or all of the services of SHARE, including bi-directional clinical data exchange. Both components of the HIE Services Stack are protected by state of the art encryption and security services, utilizes single sign on services, and have a full audit logging subsystem, as well as full NHIN compliancy.

The Services Stack portal is a web based, easy to access offering of services that providers in SHARE can easily consume (utilize). Protected by single sign-on and Federated Identity Management, providers log into a SHARE customized portal and quickly and easily consume the offering of core HIE applications,

services, and functionality. Providers authenticate once, and then access and consume the SHARE core services of a Record Locator Service (RLS) with patient demographic information, optional RLS clinical data attachments in CCD format, eprescribing, laboratory orders and results, payer interoperability, and public health reporting in the HIE Services Stack.

The MEDNET HIE Services Stack EMR Integrator (MEDNET HIE Gateway or EDGE Server) is an onsite, virtual server for providers who have an existing EMR system (or database) who wish to utilize some or all of the services in the HIE Services Stack (or publish data for utilization in the HIE), including demographic patient data and bi-directional CCD clinical data exchange with NHIN connectivity (core services mentioned above).

Hosted for the HIE, The MEDNET HIE Services Stack has core components available for utilization throughout the SHARE Hybrid HIE Services Architecture, including a full Enterprise Master Patient Index, or eMPI, a Record Locator Service, a Provider Index, an NHIN Gateway built upon the CONNECT NHIN Standards, Single Sign-On Services with Federated Identity Management and Role-Based Access Controls (RBAC), Audit Logging Subsystem, PHR connectivity, and Patient Consent Management (with opt-in and opt out services).

A suite of clinical, administrative and consumer oriented applications are available from core Team members MEDNET and RelayHealth, and have been integrated in the HIE Services Stack. HIE Services Stack includes, but are not limited to, the items as depicted below and in the attached diagram:

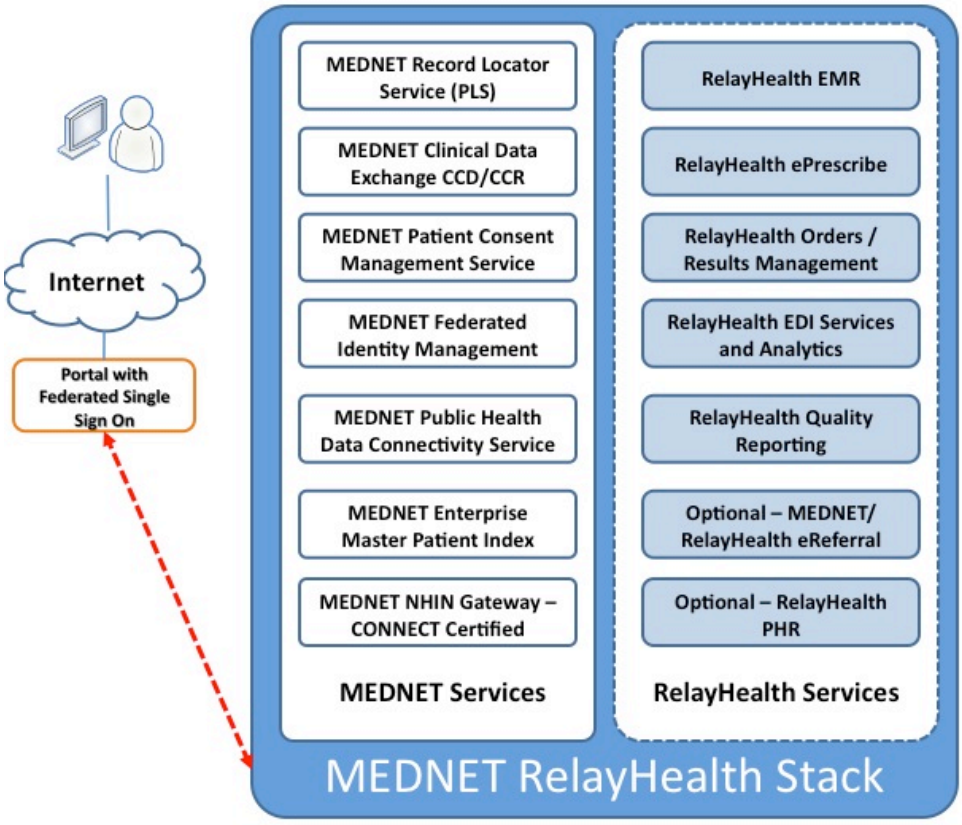
- **Electronic Prescribing** including formulary, renewal processing, and reconciliation of medical history information aggregated from numerous sources
- Patient connectivity through a connected **Personal Health Record** and comprehensive **Patient Messaging** services to aid in the coordination of care
- Provider connectivity through **Colleague Messaging** and **Referral Management**
- **Record Locator Service** with demographic patient search and optional CCD attachment support
- Customized Portal with **Role-Based Access Controls** and **Federated Identity Management** (FIM) with PKI
- **Patient Consent Management Service** with opt-in and opt-out and audit logging subsystem, compliant with state law
- Online **Results Manager** to share lab and hospital results and clinical documents with ambulatory physicians

- Automated solicitation of orders for a lab or hospital through **Orders Manager**
- **Public Health Data Connectivity**, including State systems such as immunization registries, etc.
- Automated, proactive **Eligibility** aimed at encouraging community-sensitive patient financial advocacy
- **Enterprise Master Patient Index** (eMPI)
- **NHIN Gateway** with full CONNECT NHIN SDK compliancy and interoperability
- **Bill Payment**, **Account Management**, **Eligibility,** and **Consolidated Print** services to facilitate the financial process

In addition, the roadmap for early-mid 2010 includes:

- **Documentation** and **Registry** to track patients' detailed clinical information
- Full **Quality Reporting Service** to comply with meaningful use rules

Figure 1: MEDNET RelayHealth Services Stack



4. List of Current Installed Locations

Community Health Information Collaborative (C.H.I.C.)

Operational HIE in Minnesota - HIE-Bridge

Client Name:	C.H.I.C. HIE-Bridge Health Information Exchange
Project Name:	HIE – Bridge Health Information Exchange
Contact:	Cheryl Stephens Executive Director – C.H.I.C. Duluth, Minnesota 218.625.5515 cstephens@medinfosystems.org
Contract Duration:	2008 - Present
Project Scope	The objective for this engagement was to architect, design, and build a Health Information Exchange for 18 health care systems in rural Minnesota, Wisconsin and North Dakota serving 3.5 million patients. The deliverables for this project include: • Architecting and designing a Health Information Exchange • Providing and implementing technology for a Health Information Exchange • Continued support of a Health Information Exchange (Maintenance, Patches, Fixes, Upgrades, New Solutions, etc.)

Integration of Federal Agencies with HIEs over NHIN

Client Name:	HIE- Bridge (See Above)
Project Name:	Integration of HIE with Social Security for bi-directional CCD clinical data exchange over NHIN
Contact:	Cheryl Stephens Executive Director – C.H.I.C. Duluth, Minnesota 218.625.5515 cstephens@medinfosystems.org
Contract Duration:	February 2010 - present
Project Scope	Develop, implement and integrate multiple interfaces for CCD output for bi-directional CCD clinical data exchange with the Social Security Administration over NHIN. HIE based clinical data exchange to expedite disability benefit awards by the Social Security Administration (SSA).

Lewis and Clark Information Exchange (LACIE)

Operational HIE in Missouri

Client Name:	LACIE
Project Name:	Nationwide Health Information Network (NHIN) Connectivity to Federal Agencies / The Federal Government
Contact:	Randy Groce Chief Architect, LACIE St. Joseph, Missouri 816.262.1650 Randy.groce@heartland-health.com
Contract Duration:	2009 - 2011
Project Scope	Implemented a managed service NHIN Gateway to connect LACIE to the Nationwide Health Information Network, insuring LACIE was approved and certified NHIN HIE. Connected LACIE to the Department of Defense for bi-directional clinical data exchange (HITSP c32). Connected LACIE to the Centers for Medicare and Medicaid (CMS) for supplemental claim and electronic submission of Medicare data. The deliverables for this project include: • A managed service NHIN Gateway with NHIN connectivity and certification as an NHIN HIE. • Bi-directional NHIN based clinical data exchange with the Department of Defense • Bi-directional NHIN based exchange with CMS for supplemental claim information and data

Additionally, The MEDNET Team has multiple Health Information Exchange (HIE) experience and expertise, including winning the Phase I contract for the State of North Dakota Statewide HIE, winning the Phase I contract for the State of Mississippi Statewide HIE, and recently winning the Marshfield Clinic HIE project for HIE – NHIN bi-directional clinical data exchange (CCD) with The Social Security Administration.

State level Health Information Exchange (HIE) experience includes:

- Arizona – Created their HIE Formation Framework and Participation Guide. These documents enabled the expanded engagement of rural health information exchanges across the state while ensuring overall consistency within each group's planning approach, which maximized interoperability
- Florida – Lead researcher and author on the State of Florida Strategic and Operational Plan
- Hawaii – Leading their legal and operational efforts that focused on Hawaii state privacy laws impacting the implementation of the Big Island Health Information Exchange
- Indiana – Part of the original team that formed the Indiana HIE. As a key team member in the original establishment of this successful HIE, developed governance agreements that were legally binding and resolved issues specific to privacy and security
- New Jersey – Supported the Jersey Health Connect initiative covering health systems and providers in the northern and central New Jersey region in their successful application for the state's health information exchange collaborative funding under ARRA.
- Maryland – Facilitated their statewide privacy and security initiative. During the direction of this project, identified and provided reconciliation assistance to existing state legislation that inhibited effective health information exchange
- Minnesota – Designed, architected and implemented (including providing strategic and operational planning and development) the HIE - Bridge Health Information Exchange, an NHIN compliant multi-state HIE
- North Dakota – Leading their efforts to create Statewide HIE Strategic and Operational Plans
- Wisconsin – Led their HISPC I and II privacy and security initiatives. Actively engaged at both the federal and state levels to provide input and guidance to HISPC I and II, which became the national framework for privacy and security in health information exchange

The MEDNET Team's Federal experience includes:

1. HISPC I and II, Privacy and Security standards development through the Office of the National Coordinator
2. Office of National Coordinator (ONC) Nationwide Health Information Network (NHIN) Specification Factory Participant for multiple projects; Specification Factory Team lead for Centers for Medicare and Medicaid Services (CMS) MITA Medicaid eligibility specification for NHIN / CMS / ONC and the Federal Health Architecture (FHA)
3. ONC NHIN CONNECT tested and fully compliant partner for the Nationwide Health Information Network, listed on ONC NHIN CONNECT website www.connectopensource.org under partner and adopter tabs
4. DURSA (Data Use and Reciprocal Support Agreement for NHIN) committee participant
5. Awarded and implementing the Social Security Administration (SSA) NHIN CCD based clinical data exchange Contract for HIE.
6. Integration of HIEs with multiple Federal Agencies over the Nationwide Health Information Network (NHIN), including the Department of Defense, Centers for Disease Control (CDC) and Centers for Medicare and Medicaid Services (CMS)
7. HiMSS ARRA Ambulatory Physician Workgroup
8. HiMSS Meaningful Use Workgroup
9. HiMSS presentation of the NHIN / Federated Identity
10. HiMSS demonstration of the CMS Medicaid MITA NHIN Specification with CMS / ONC / NHIN at the 2010 Annual Conference

Local and Regional HIE experience includes:

1. SunCoast (Sarasota, Florida) HIE
2. Montgomery County (Rockville, Maryland) HIE
3. Tampa Bay (Tampa, Florida) HIE
4. eHealth Ohio HIE (Columbus, Ohio)
5. Lewis and Clark Information Exchange (LACIE) HIE (rural Missouri)

6. Wisconsin Health Information Exchange (Milwaukee and Southern Wisconsin)
7. Community Health Information Collaborative and HIE – Bridge HIE (Duluth, Minnesota)
8. Jersey Health Connect (northern and central New Jersey)

The MEDNET Team's unique qualifications include:

- Multiple state HIE experience in both rural and urban exchanges
- Nationally recognized experts in HIE, Meaningful Use and NHIN / FHA
- Open systems philosophy
- Direct, hands-on experience with HIE formation and sustainability
- Participation in national efforts, policy work and legislation

5. Estimate of Implementation Timeline – Pilot Project and Broader Installation

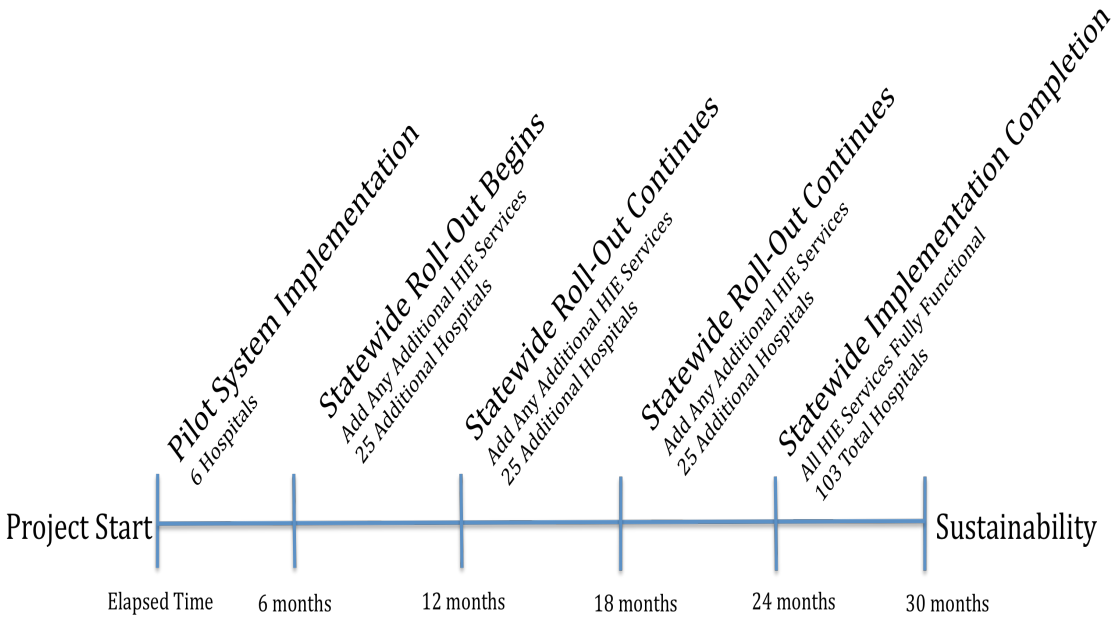
The pilot project implementation is estimated to take six months for full deployment and testing. The pilot project will test the core HIE service of a Record Locator Service (RLS) with integrated enterprise Master Patient Index (eMPI). The pilot project will also test the NHIN connectivity and the link to the immunization registry. This pilot will allow the State of Arkansas to test the core HIE capabilities with the same network and core components to be used in the statewide installation. This pilot will, therefore, allow the State to test the capabilities and usability of the statewide network in an efficient and affordable manner.

Table 1: Pilot Project Implementation Timeline

Milestones	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Install Gateways (3)						
Install Gateways (3)						
Install User Portal						
Test Gateways						
Test Portal						
Configure eMPI						
Install eMPI						
Install NHIN Gateway						
Roll-Out to 100 Users						
Link to Immunization Registry						
Full Deployment						
User Acceptance Testing						

Statewide Implementation & Broad Installation is estimated below in figure 2. The timeline provided allows for installation and testing of a fully operational pilot in the first six months, leveraging the exact architecture to be used in the statewide implementation. After the pilot has been completed, statewide rollout can begin. All 103 licensed hospitals can be connected to the 'live' HIE within two years of the pilot ending.

Figure 2: Statewide Implementation & Broad Installation Timeline



6. Description of the Financial Business Models Supported

The MEDNET Team has experience in multiple states with multiple HIE financial and sustainability models, and thus, the Team fully supports all financial models, from subscription to hybrid to utility.

The MEDNET Team has partnered with Hielix, experts in Health Information Exchange business and financial models, and well as provider outreach and adoption services (along with meaningful use), specifically for this purpose, and, as part of our response, Hielix is prepared to work with SHARE on developing a specific, custom financial model for SHARE to foster HIE adoption, usage, meaningful use and ongoing financial sustainability.

Therefore, it is the recommendation that SHARE develop a custom, SHARE specific financial model for ongoing sustainability and HIE adoption, rather than have The Team recommend one model at this time.

Hielix has operational experience with multiple HIEs from the regional level to the state level, and can offer a multitude of financial modeling, examples of best practices, and other data to support SHARE.

At Hielix, we understand the challenges that HIE planning and implementation may cause in your workplace. We developed our Hielix HIE Framework to better understand the balance needed between technology and operations in any HIE effort. Think of our Hielix HIE Framework as the DNA of your organization. One strand of that DNA represents technology. The other strand represents the people and operational processes impacted by planning and implementing HIE. What connects the two strands are the organizational capabilities of leadership, long-term strategy, financial sustainability, operational outcomes, performance measures, and employee training and education.

The Hielix HIE Framework aligns and integrates these two critical strands to facilitate and enable the successful exchange of electronic health information.

Table 2: Hielix HIE Framework

Technology Integration	Operational Integration
Creates a technology architecture and standards	Engages stakeholders, builds trust and a willingness to participate
Integrates legacy systems with e-Health technology solutions	Identifies the various stakeholder value propositions
Provides clear accountability and responsibility	Prepares consensus based business and financial plans
Follows best practice project management standards	Develops consumer/provider buy-in for HIE
Protects patients privacy and security	Establishes collaborative efforts between diverse stakeholders
Provides technological support for local participants	Assists stakeholders with the practice transformation process

The Hielix HIE Framework provides a set of activities that help prospective stakeholders guide their decisions in the development and employment of solutions to seamlessly exchange healthcare information.

1. The Hielix HIE Framework represents a clearly defined roadmap to identify the specific elements necessary to create a sustainable business model
2. Each HIE / RHIO project is unique to the individual stakeholders. Only by using the Hielix HIE Framework is a unique and sustainable business and financial model created that satisfies the wants and needs of each stakeholder.
3. Hielix HIE Framework is built from our own hands-on experience creating HIEs in several states
4. The Hielix HIE Framework helps each stakeholder understands how their business interests and value propositions are integrated into the final design
5. The Hielix HIE Framework aligns the operational realities with technology to provide the most cost effective and robust solution

Hielix has been helping clients be successful for nearly 20 years and in healthcare for the past five. Our operational experience gives the Hielix team the knowledge and experience to openly pursue the HIE model that creates the most value for each stakeholder. Only by being open to the unique business requirements and interests of each stakeholder is it possible to create long-term sustainability. Hielix is invested in the individual success of each stakeholder within all HIE solutions. Our professional and personal investment in your success provides us with an opportunity to find the common points of intersection between diverse stakeholders and find the optimal solution.

Suggested Service Level Agreement Terms

Attached and included are The Team's standard SLAs, however, The Team would prefer to work with SHARE to create a SHARE specific SLA.

MEDNET Service Level Agreement

MEDNET is committed to providing quality services for the period of performance of the contract ensuring the necessary staff and infrastructure to support and fix all issues related to the on-going exchange of health information. The project requires technical staffs and infrastructure for 1) software development, 2) system integration (mainly with EHR systems), 3) testing (connectivity, interoperability, and end-to-end transaction), and 4) production system/service maintenance for successful fulfillment of the project. MEDNET guarantees to provide high-quality technical staff/infrastructure support required at every phase of the project.

Technical Staff Support Guarantee

[Standard Support] MEDNET's Technical Support Guarantee is that MEDNET staff will be available for support related to the MEDNET portion of the project. The standard support services are provided during normal business hours (8:30AM – 5PM, Central Time) and 5 days a week via telephone and email.

[Emergency Support] In the event emergency support is required, MEDNET guarantees that any emergency technical support request submitted to MEDNET Technical Support, will be routed to a MEDNET Technical Staff and will receive a response from MEDNET technical support staff within 2 hours.

Following table shows provided technical staff support for tasks required for the period of performing the project.

Major Tasks	Description	MEDNET Technical Staff Support	
		Standard Support	Emergency Support
Software Development	Development software applications required for the project: including NHIN Gateway (with on-going upgrade), service components, and subsystems (e.g., MPI, document registry/repository)	√	
System Integration	Integrating MEDNET systems with participating healthcare providers' EHR systems to support clinical data exchange – CCD: HL7 interfacing or CCD interfacing	√	
Testing	Connectivity: Network connectivity testing addressing all network configuration/firewall issues Interoperability: Service to service interoperability mainly NHIN transactions End-to-End Transaction: testing of workflows – unit/whole	√	
System/Service Maintenance	Monitoring of system/service performance and availability. Supporting any planned/unplanned system/service outage.	√	√

Infrastructure Support Guarantee

[Facility Security] MEDNET guarantees facility security by providing all their services from a secure data center. One of our datacenters is owned and managed by XO Corporation, see: http://www.xo.com/SiteCollectionImages/about-xo/xonetwork/maps/map_complete_800.gif.

The data center facility is a controlled access environment. All entrance to the data center is restricted via a combination of a secure ID card and a PIN.

The Minneapolis XO Datacenter is a purpose-built telecommunications center on the XO national fiber backbone. It provides data and telecommunications services for many of the large telcos. It is secured with multiple levels of access controls, including card access controls and video monitoring. It has redundant

diesel generators, redundant fiber entrances, fire suppression and other services to ensure reliable operations.

[System/Service Notification and Reporting]
MEDNET guarantees to notify participating organization's designated contact in the event of any system/service unavailability. It includes (a) scheduled MEDNET network maintenance, (b) scheduled system upgrade/updates, (c) scheduled security upgrade/updates, (d) unplanned system/service down, and (e) unplanned network outage.

Estimated Cost of Solution Components

The MEDNET Team has developed a Pilot Program for SHARE, insuring SHARE can initiate Health Information Exchange Services quickly and effectively in a production pilot, and then expand pilot services quickly to other members while adding additional HIE applications, data and services.

The SHARE Pilot Program, as listed below, would allow up to 100 users to securely access demographic data from six (6) participating hospitals, as well as data integrated from and with the State Immunization Registry, via a SHARE customized portal, utilizing a production Record Locator Service application (as the initial use case).

Integrated into The SHARE Pilot is a full eMPI and full NHIN Gateway, protected by single sign-on and Federated Identity Management with Role-Based Access Control (RBAC) and PKI, as well as a Patient Consent Management Service (with patient opt-in / opt-out and full audit logging subsystem). The SHARE Pilot Program includes business hours support, as well as maintenance, patches, fixes and ongoing upgrades.

Components in the SHARE Pilot Program with up to 100 users and six (6) participating hospitals for a Record Locator Service use case include:

- 6 EMR integrator components (The MEDNET HIE Gateway, or EDGE Server) for full support of 6 Hospitals for Record Locater Services (Demographic only)
- Installation of 6 EMR integrator components (as listed above)
- SHARE customized user Portal with support for up to 100 Physicians or users for Record Locater Services (Demographic only)
- Integration of SHARE customized user Portal and Record Locator Service with Arkansas Immunization Registry System
- Federated Identity Management with Role-Based Access Controls and Public Key Infrastructure support for Portal users (above)
- Patient Consent Management Service with opt-in / opt-out and full audit logging subsystem
- Enterprise Master Patient Index (eMPI)
- Full NHIN Gateway and NHIN compliancy, based upon CONNECT SDK NHIN Gateway

The MEDNET Team approximates the cost for the SHARE Pilot Program as listed above to be $795,000, and estimates full deployment of the SHARE Pilot Program within a six (6) month time period.

Table 1: Pilot Project Implementation Timeline

Milestones	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6
Install Gateways (3)						
Install Gateways (3)						
Install User Portal						
Test Gateways						
Test Portal						
Configure eMPI						
Install eMPI						
Install NHIN Gateway						
Roll Out to 100 Users						
Link to Immunization Registry						
Full Deployment						
User Acceptance Testing						

Additional Pricing Information:

The MEDNET Team has component based pricing, insuring that SHARE can budget appropriately to add hospitals, users, applications, and services. By utilizing existing, developed applications and services from MEDNET and RelayHealth, SHARE can add and 'turn on' services and users in a modular approach. Specific pricing is confidential, and is based upon a per-user and per-service fee (annual fee per user per service). More pricing detail can be provided with SHARE upon request, however The MEDNET Team is confident, based upon prior HIE experience and implementations, that we can implement the SHARE core services on time and within the SHARE budget, as illustrated in our Pilot Pricing for SHARE listed above.

Additional services and fees, including Medicaid alignment, HIE consulting services, meaningful use training, provider outreach, and sustainability / financial /business model review and consulting are available and are typically built into the complete package pricing of The Team.

5.2 General Solutions Description

The MEDNET HIE Services Stack fully meets and exceeds the Core Requirements and General Solutions as described in the RFI.

1. Interoperability:
The MEDNET HIE Services Stack fully supports the functionality to provide for the exchange of structured health care data between certified systems. The interoperable HIE Services Stack solution will allow for the communication between disparate locations required to meet the meaningful use criteria. The MEDNET HIE Services Stack utilizes standardized formats, such as continuity of care documents (CCD), to ensure rapid and efficient communication between clinicians, citizens, public health entities and payers.

The MEDNET HIE Services Stack includes an Enterprise Master Patient Index (eMPI) and integrated Record Locator Service (The MEDNET Patient Lookup Service), viewable and accessible through a web browser (and includes a customized SHARE web portal). All services and applications are cryptographically protected with Federated Identity Management with Role-Based Access Controls (RBAC), Public Key Infrastructure (PKI), and Single Sign-On. More information about these security services, including the Patient Consent Management Service with full audit logging subsystem, are detailed below.

The MEDNET HIE Services Stack fully supports exchange for:

- Patient demographic data – Patient demographic data can be searched upon and viewed via the MEDNET Patient Lookup Service (Record Locator Service)

- Patient vital information – Patient vital information can be found and reviewed via two processes: through the EMR provided in the HIE Services Stack as well as through the Continuity of Care Document (CCD) as an attachment in the Patient Lookup Service (Record Locater Service).

- Medication Information – Medication information and management as well as ePrescribing is performed through the ePrescribing application and services in the HIE Services Stack.

- Diagnostic testing information – Diagnostic testing information and clinical laboratory orders and results are managed via the laboratory system in the HIE Services Stack.

- Other structured clinical summary information – Other clinical summary information can be found in the EMR provided in the HIE Services Stack

as well as through the Continuity of Care Document (CCD) as an attachment in the Patient Lookup Service (Record Locater Service).

- Public Health Information – Public Health information, including immunizations, is accessed and interfaced into the HIE Services Stack via provided APIs to the Public Health department and through NHIN to Federal Agencies such as the CDC, Centers for Disease Control.

- Insurance type and other administrative transactions – Insurance type and payer information is fully interfaced and available through the EDI and administrative services offering in the HIE Services Stack.

- The MEDNET Team, and core team member Public Consulting Group (PCG) has provided Medicaid consulting experience to more than 40 states, particularly in revenue enhancement and management, system planning and implementation, and technical consulting. In addition we completely understand the interdependencies of the Medicaid Management Information System (MMIS). We will work with the state Medicaid Agency and Medicaid systems and processes to insure Arkansas Medicaid is in full alignment and interoperable with SHARE.

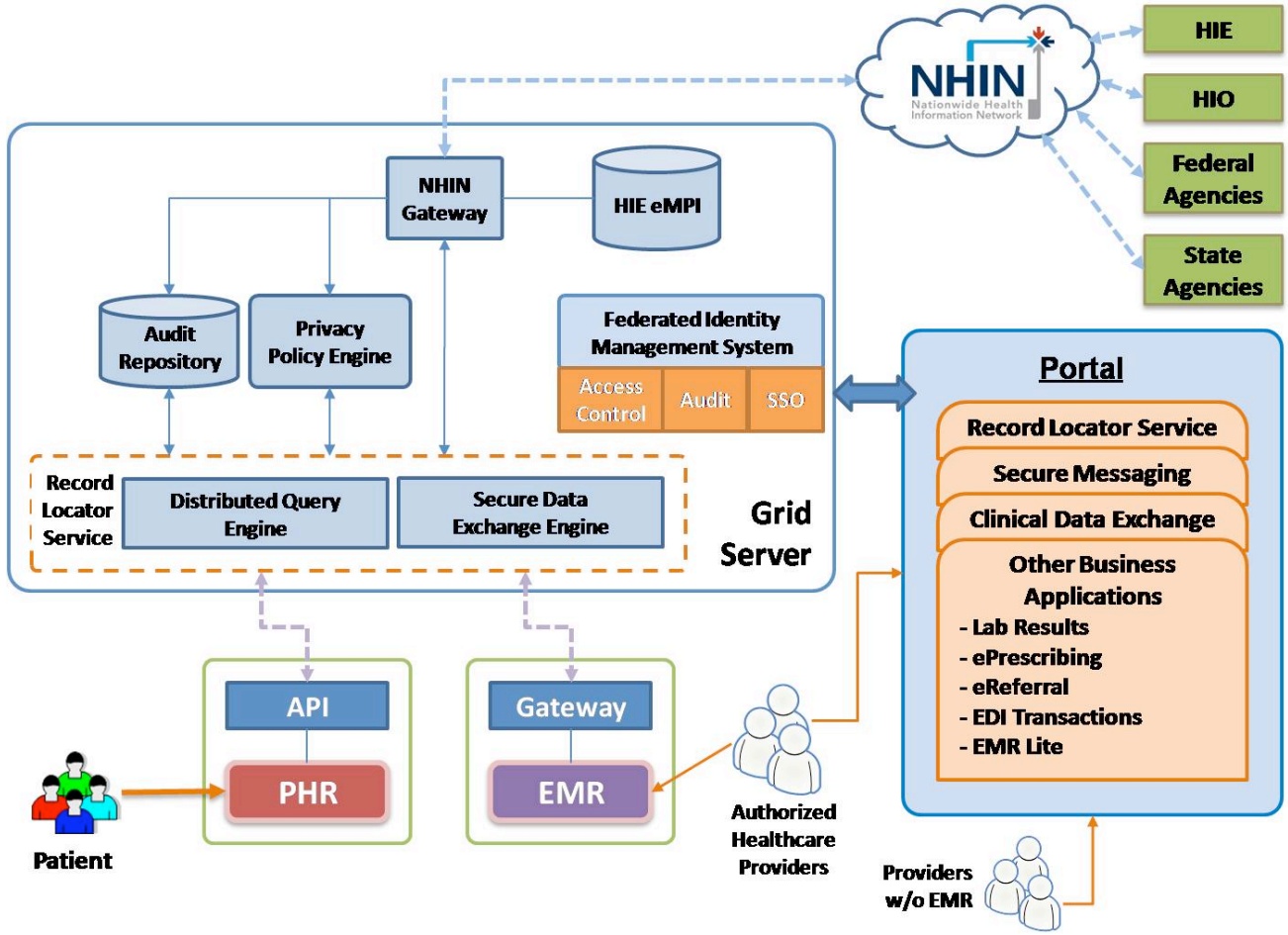
2. Technical Architecture and Approach:

The architecture and HIE Services Stack proposed by the MEDNET Team to SHARE will leverage existing information systems, data sources, and information networks of all types and sizes. This leveraging of existing infrastructure will ensure that information from each disparate location is captured for convenience and efficiency. The HIE Services Stack utilizes a universal translating engine and the standardized language used for exchange of disparate information, including CCD. The HIE Services Stack and MEDNET Team can guarantee national connectivity and interoperability through our extensive work on the Nationwide Health Information Network (NHIN). The MEDNET Team has unparalleled NHIN experience, and can be found listed as a vendor and partner under the 'partners' tab on the NHIN CONNECT's website at connectopensource.org.

The MEDNET Team and HIE Services Stack will provide an infrastructure that supports each of the eight key principles for the HIE technical architecture and approach. The Services Stack provides for a scalable architecture, which can be implemented as a pilot system and easily as expand to a statewide model. This solution is very usable and can be accessed at the point of care to improve the healthcare delivery process.

MEDNET offers industry-leading privacy and security solutions including Public Key Infrastructure encryption and privacy policy management. The MEDNET Team will ensure that all existing information systems and networks can be leveraged and integrated to support SHARE and overall interoperability. The combination of our technical architecture and implementation approach allows the MEDNET team to offer a solution in full alignment with the key overall principles provided in the SHARE RFI.

Figure 3: MEDNET Hosted Grid Server and Core Architecture



The HIE Services Stack design utilizes a core set of services supported by our centralized and hosted grid server, which relays and processes requests from each provider regardless of size and location. By utilizing this hosted grid technology and existing, production applications and services, the HIE Services Stack architecture can be deployed and activated for almost an unlimited number of users in the pilot phase.

After pilot phase, additional users, applications, services, and data sources can be quickly added to the overall architecture and infrastructure without dramatically changing software or architecture. This allows for the convenient creation of a pilot system, and an efficient incremental deployment of statewide exchange capabilities.

MEDNET is an industry leader in privacy and security technology, providing solutions with Federated Identity Management (FIM) with Role-Based Access Control (RBAC) with military grade PKI encryption technology. MEDNET and the

HIE Services Stack are fully compliant with all HIPAA regulations, and utilize standards based security mechanisms, including PKI (Public Key Infrastructure) encryption technologies. A further description of our PKI technology is provided below in the explanation of security in section 5.3.

MEDNET's Patient Consent Management Service, with complete audit logging subsystem, is a good example of our commitment to preserving the privacy and security of health information, while respecting patient choice. Every activity, including both human and information system activity, is logged in the MEDNET audit log repositories at multiple levels for security review and auditing (MEDNET utilizes an ATNA audit logging subsystem, and is IHE compliant and certified). The MEDNET Patient Consent Service with audit logging subsystem includes details such as access to personal health information (PHI), authentication, authorization, log-in/log-out, PHI export/import, etc. Also included in the MEDNET Patient Consent Management Service is a full patient opt-in and opt-out service, in full compliance with current state law for patient opt-in/opt-out and Record Locator Services (RLS).

In conclusion, the technical architecture and implementation approach proposed by MEDNET fully comply with all eight key overall principles for the HIE as listed in the RFI request. This will allow for a secure information exchange with a messaging infrastructure, full NHIN compliance, and industry-leading privacy controls.

This architecture can be implemented as a pilot, and easily expanded statewide for and by SHARE very quickly. Most importantly, the MEDNET HIE Services Stack architecture will ensure that the healthcare delivery process can be improved to provide more efficient and higher quality care to the people of Arkansas.

Specific RFI Questions and Answers:

1. The HIE will provide an infrastructure that is secure and protects the privacy of consumers, providers, and other constituents.

   The MEDNET HIE Services Stack utilizes a robust Patient Consent Management Service, with opt-in / opt-out services and a full ATNA audit log. The MEDNET HIE Services Stack is in full compliance with Minnesota State Law (known for being a strict patient privacy state and law), as well as other state laws in regards to patient privacy and consent management with patient opt-in and opt-out. Additionally, the HIE Services Stack is fully protected with single-sign on and Public Key Infrastructure (PKI) with Role-Based Access Controls. Please see Privacy and Security section below for further detail.

2. The HIE will improve the health care delivery process in Arkansas by providing information availability.

   The HIE Services Stack offers a single source of applications and services, fully integrated with a Record Locator Service (MEDNET Patient Lookup Service) with optional clinical data exchange (CCD).

3. Best practices and standards for information technology infrastructure will be utilized in the creation of the HIE.

   MEDNET and the HIE Services Stack are fully compliant with the Nationwide Health Information Network (NHIN) and Federal Health Architecture (FHA), and utilize open standards and profiles.

4. NHIN standards and specifications will be implemented in the NHIN Gateway.

   MEDNET is fully certified and implementing multiple NHIN Gateways, built on the CONNECT SDK platform. MEDNET and Hielix are listed as NHIN compliant and tested partners and adopters on the NHIN CONNNECT website at www.connectopensource.org

   MEDNET is implementing multiple NHIN Gateways, built on the CONNECT platform, for bi-directional data exchange with HIEs over NHIN. MEDNET is implementing bi-directional CCD exchange over NHIN for two HIEs to the Social Security Administration (SSA), including the Community Health Information Collaborative, Duluth, MN and The Marshfield Clinic HIE, Marshfield WI.

   MEDNET is implementing bi-directional clinical data exchange (HITSP c32) with the Department of Defense (DoD) and the Lewis and Clark Information Exchange (LACIE), a four state HIE. MEDNET is implementing a NHIN based administrative data exchange with the Centers for Medicare and Medicaid Services (CMS) and LACIE.

5. The HIE technical infrastructure will leverage existing sources of health information, including current exchanges.

   The MEDNET HIE Services Stack fully interoperates with existing feeds of data (public health, immunization registries, Medicaid administrative data, CCD clinical data summaries, etc.), and is fully interoperable with existing exchanges and data sources, including the Google and Microsoft Personal Health Record (PHR).

6. The HIE architecture will support an incremental deployment of a statewide exchange capability.

Due to the flexibility of the HIE Services Stack, SHARE can implement a pilot HIE implementation, test, and rollout further deployments very quickly and efficiently.

7. The HIE technical infrastructure will start with a proof of concept and expand as feasible.

   As stated above, the ability of SHARE to rollout the HIE Services Stack to a proof of concept group can be accomplished via the proposed HIE Pilot as mentioned above. Such a proof of concept could be implemented and rolled out in a very short timeline (ie a few months), dependent on the number of users with active participation, locations, etc. The HIE Services Stack could then be fully deployed across Arkansas as a Phase II, and then fully integrated with existing EMR systems/providers and state systems as a final phase, or Phase III.

8. The HIE technical infrastructure will provide messaging infrastructure with guaranteed, secure information delivery.

   The HIE Services Stack provides a complete messaging platform protected by Federated Identity Management with Role-Based Access Controls and Public Key Infrastructure. All transactions are logged and fully auditable within the system.

3. Design Principles and Requirements:

The MEDNET Team fully supports the State of Arkansas SHARE hybrid model for HIE. The Team is extremely familiar with hybrid models of HIE, and has experience designing and implementing hybrid model HIE (for example, the State of North Dakota Statewide HIE will be a hybrid infrastructure, and is currently being designed by MEDNET and Hielix). The MEDNET Team has experience with Hybrid, Federated, and Centralized HIE models.

The HIE Services Stack architecture provides core HIE functionality for information exchange, plus additional services for end user application functionality. This means that the architecture is based on facilitating information exchange, yet provides a wide range of application functionality. The unique blend of core functionality and additional services ensures that the HIE information exchange is exceptionally capable at the core function of secure information sharing, without ever compromising the usability, convenience or depth of services to the end-user.

The HIE Services Stack utilizes standard security protocols such as Federated Identity Management, RBAC, and PKI security and digital signatures to support a wide range of security functions. These security functions supported by the HIE Services Stack includes user authorization, authentication, non-repudiation, digital encryption, audit logs, opt-in/opt-out and administrative capabilities.

MEDNET's hosted grid architecture provides a highly scalable and expandable architecture, which allows for quick deployments of hosted, small-scale pilots and nationwide health information exchange infrastructures alike. This architecture provides an exceptional platform for a true proof of concept by using the same hosted grid architecture and software for information exchange for all sizes and scales.

1. The HIE will be vendor neutral

The HIE Services Stack fully supports many EMR and clinical (and administrative) vendor systems, including offering APIs for PHR connectivity, a web based portal component for those with no EMR or needing a lightweight experience; and a direct, EMR integrator component (called the MEDNET HIE Gateway, or EDGE Server), for those with an existing EMR system who wish to consume some or all of the services of SHARE, including bi-directional clinical data exchange. The preferred method of interoperability for the HIE Services Stack is the HL7 format.

The HIE Services Stack includes state of the art encryption and security services, single sign on services, audit logging systems, and full NHIN

compliancy.

2. The HIE will rely upon a network to provide service functionality

   The HIE Services Stack allows SHARE to offer Software As A Service (SaaS) based applications and services to the SHARE users. Additionally, the MEDNET Grid Services are hosted, and as such, are not required (but can be, if so desired) to be physically installed onsite at the HIE or HIE datacenter.

3. The HIE will be a hybrid architecture

   The HIE Services Stack fully allows and supports the Hybrid architecture of SHARE.

4. The HIE will be focused on facilitating exchange of information rather than end user application functionality

   Core functionality of the HIE Services Stack the Record Locator Service (Patient Lookup Service), with optional CCD clinical data exchange, allowing for record lookup and sharing of patient data, including clinical data.

5. The HIE will support construction and aggregation of the longitudinal patient record

   The HIE Services Stack fully supports the longitudinal patient record.

6. The HIE will comply with current interoperability standards

   The HIE Services Stack is built upon open standards, and is IHE certified, as well as NHIN CONNECT tested and compliant.

7. The HIE will interoperate with existing community and private HIE, as well as the NHIN

   The HIE Services Stack has integrated NHIN into the stack, and as such offers both inter and intra HIE connectivity and interoperability, and utilizes NHIN.

8. The HIE architecture will be scalable and expandable

   The HIE Services Stack is built upon open standards, and is fully scalable from a pilot project to a full statewide implementation.

9. The HIE will support standards security protocols and auditing

Please see Privacy, Security, and Patient Consent Management section below.

10. The HIE will utilize standard data storage and management protocols

    The HIE Services Stack is fully operated and supported by both MEDNET and RelayHealth's data center, including SLAs and best practices for data storage and management protocols, and is a hosted grid architecture.

11. The HIE will be supported by standard business continuity and disaster recovery infrastructure and processes

    The HIE Services Stack, as well as both MEDNET and RelayHealth, fully support standard business continuity and DR infrastructure and processes.

12. The HIE must be compliant with the accessibility requirement in Arkansas Act 1227 of 1999.

    Arkansas Act 1227 focuses on providing equal access to individuals who are blind or visually impaired. This Act requires "equivalent access by both visual and non-visual means," to the information technology purchased by the State of Arkansas. Our solution is in full compliance with this act because our web-based solution will allow for the convenient use of screen-reading software. The blind and visually impaired often utilize screen-reading software, such as Jaws Screen Reader by Freedom Scientific, for audio access to a web site that is traditionally interpreted visually.

    Additionally, our system supports Role-Based Access Controls (RBAC). RBAC allows a user to establish a relationship within a system, such as guardian to a patient. RBAC can be used to provide a guardian or interpreter full rights to a patient's information, thus allowing them to communicate the information from our solution to the impaired or disadvantaged individual.

4. Architectural Overview

The HIE Services Stack fully supports and integrates with the architecture as recommended in the RFI. Please see Section 2, Technical Architecture and Approach, for more technical details.

5. Core Requirements

HIE Services Stack Overview and Components – As Related to Core Requirements in the RFI:

1. *The MEDNET eMPI Service*

In order to support Inter-HIE patient discovery, MEDNET has implemented an eMPI, or Enterprise Master Patient Index, as a part of the MEDNET HIE Services Stack. The MEDNET eMPI interacts with the Record Locator Service to establish the mutual identity between patients from the local HIE, as well as other HIEs. For unique patient IDs, the MEDNET eMPI combines a local patient ID (Medical Record ID or other locally unique IDs) with an OID uniquely assigned to each healthcare organization.

The MEDNET eMPI utilizes standards based technologies for integration and communication between disparate systems, databases, etc. (Core specifications of the MEDNET eMPI are CONFIDENTIAL, however MEDNET utilizes standards based technologies, including IHE certifications and profiles, VMWare instances, NHIN standards for connectivity and interoperability, PKI for encryption and authentication, etc.) The MEDNET eMPI Service is fully integrated with the MEDNET Patient Lookup Service (Record Locator Service RLS) below.

The MEDNET Patient Lookup Service (Record Locator Service RLS)

Modern patient care techniques and services demand instant access to a patient's disparate healthcare information. Instant access is realized with a system that accurately identifies all related information for an individual automatically, without human intervention. The MEDNET Patient Look Up Service™ is a Web-based record locator service (RLS) utilizing a distributed index of patient identifying information.

The MEDNET Patient Lookup Service provides healthcare providers with patient location and identification capabilities and is one offering of the MEDNET HIE Services Stack. All of the offerings in the MEDNET HIE Services Stack, including The MEDNET Patient Lookup Service, are protected by Single Sign-On security technologies, with Federated Identity Management and Role-Based Access Controls (RBAC).

In general, a "Record Locator Service", or RLS, can be defined as an electronic index of patient identifying information. This RLS information directs providers to the location of the patient health records (usually held by healthcare organizations). The two core capabilities of the MEDNET Patient Lookup Service (RLS) are 1) identifying a patient within a community (HIE or RHIO) and/or in a remote communities and 2)

identifying the location (communities and/or healthcare provider facilities) of a patient's clinical data.

Users search a patient with full or partial demographic information including first name, last name, date of birth, gender and zip code, and other parameters. The MEDNET Clinical Data Exchange Service can be integrated with the MEDNET Patient Lookup Service for full query and exchange of patient clinical data (CCD), as clinical data attachments in the MEDNET Patient Lookup Service (Record Locator Service).

For a secure search and Patient Lookup Service transaction, Web Services technologies are utilized, along with PKI (Public Key Infrastructure) encryption and security technologies. A secure channel is established over TLS and messages (containing PHI) are encrypted and digitally signed when they are transmitted from one system to another health information system. Communication between systems and end secure nodes is a Web Services call built on top of a SOAP and SAML stack.

Examples of the MEDNET Patient Lookup Service, as well as an attached and integrated CCR clinical summary document, are below for review.

Figure 4: MEDNET Patient Lookup Screen Shot

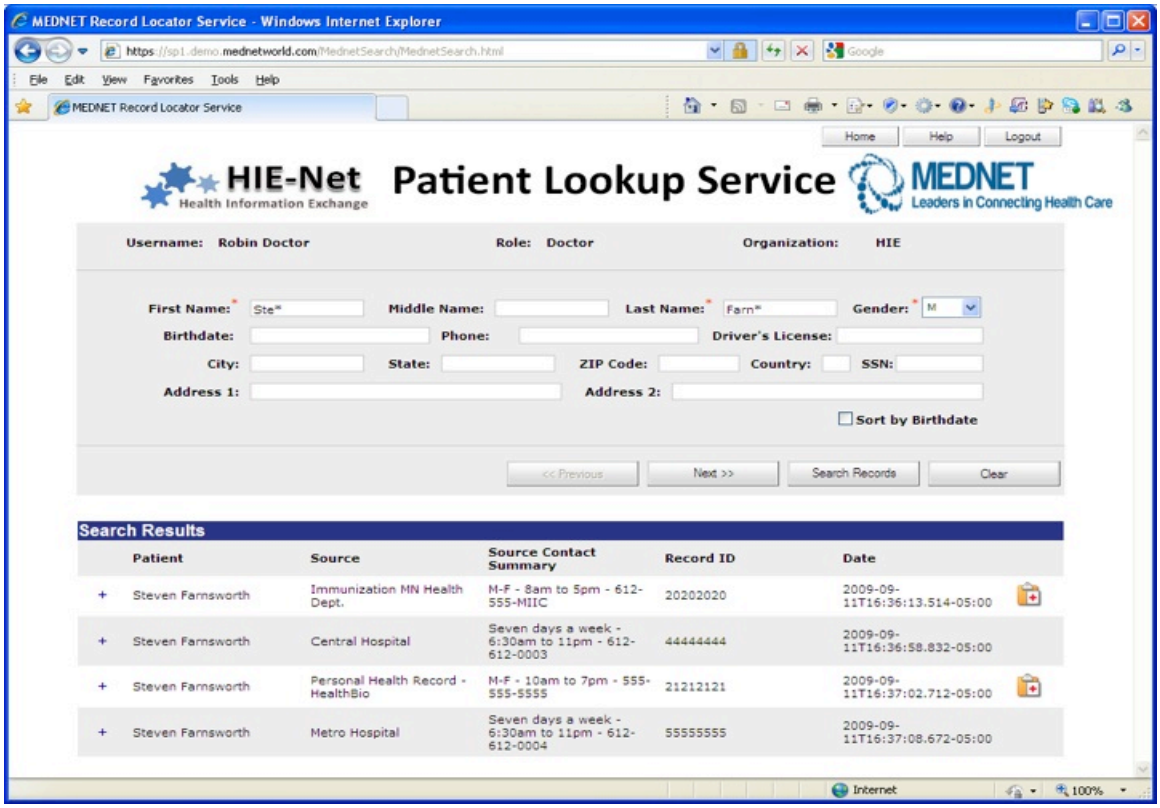
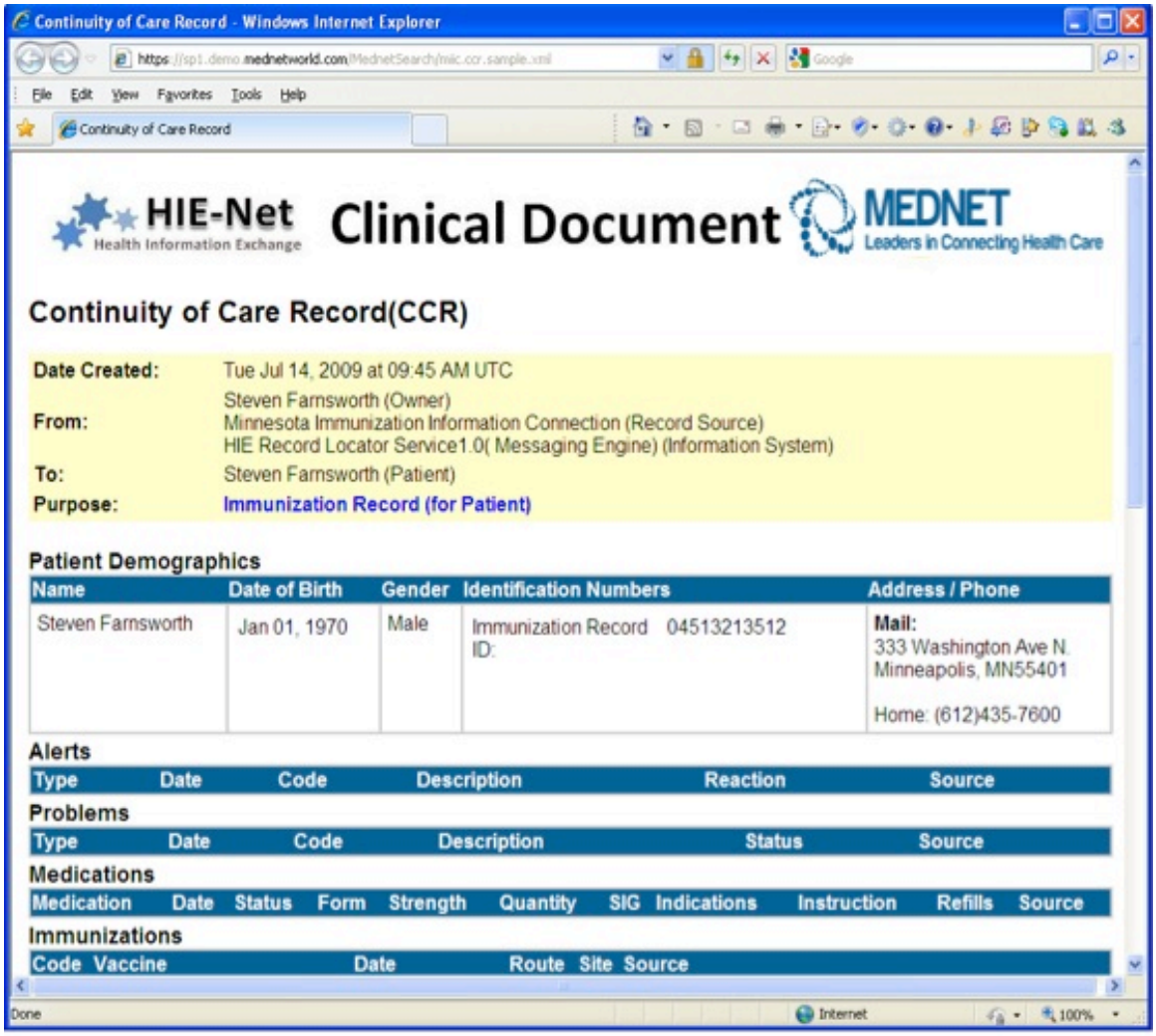


Figure 5: MEDNET Clinical Document Attachment Screen Shot



Clinical Data Exchange and NHIN based CCD exchange:

MEDNET Clinical Data Exchange Service
The MEDNET Clinical Data Exchange Service™ provides HIPAA-compliant clinical data exchange in both standard and non-standard data formats, including HL7 2.x, ASTM's CCR, HL7/ASTM's CCD, HITSP/C32, ANSI X12N, other text files, images, scans, etc. Clinical data is shared between participating healthcare organizations such as primary care clinics, specialty care clinics, hospitals, public health departments, pharmacies, laboratories, imaging centers, other care settings, and ancillary services. Industry-proven PKI (Public Key Infrastructure) and Web Services technologies are utilized to ensure security and privacy of the clinical data exchange over the public Internet.

The MEDNET Clinical Data Exchange Service is included on The MEDNET HIE Gateway (EMR Integrator, or Edge Server) implementing The NHIN Core Service Interface Specifications. The MEDNET HIE Gateway contains two components to support Intra-HIE clinical data exchange: The Document Repository and The Clinical Data Routing Subsystem. The Document Repository is an implementation of the IHE XDS Repository to store clinical documents. The Clinical Data Routing Subsystem is a service bus to support data exchange between The MEDNET HIE Gateway and EMR systems. This Subsystem supports various communication protocols (e.g., HTTP, FTP, LLP, JDBC, Socket etc) and contains message transformation modules.

The MEDNET Team and HIE Services Stack fully supports the Federal Health Architecture and the Nationwide Health Information Network, and as such, fully supports NHIN based bi-directional CCD clinical data exchange. Please see NHIN specific section (below) for more details on the fully supported, integrated NHIN connectivity.

Note: for providers to utilize the MEDNET Clinical Data Exchange Service and bi-directional CCD clinical data exchange, providers must have a MEDNET HIE Gateway (or Edge Server) and have the capability to produce (output and input) a CCD clinical document. If providers are unable to produce a CCD clinical document, The Tem will provide integration services and CCD modules, for a custom, per installation price (modules not included in this proposal, please contact The Team for pricing and details).

2. Data Dictionary and Vocabulary Standardization

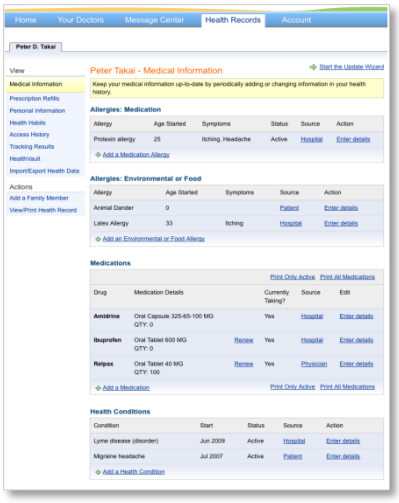
Team member RelayHealth enables a health information exchange community to share health summary information through aggregation of data onto a patient's RelayRecord.

The RelayRecord is a community's central repository for health summary information. Each enterprise clinical application need only connect with the RelayRecord to share data with other members of the community. Clinical systems can transact with the RelayRecord. Community clinicians without clinical infrastructure can use a web browser to interface with it. And most of the data on the RelayRecord is available directly to the patient through RelayHealth's browser-based Personal Health Record, including the ability to add and update clinical information.

From an application integration perspective, the RelayRecord greatly simplifies the complexity and costs of integration. Instead of having to

support direct interfaces with each member of the community, in a point-to-point integration model, the RelayRecord provides a network model with each application only responsible for a managing a single integration point to RelayHealth. The total number of connections for a community, thus total integration costs, rises linearly with the number of nodes, as opposed to exponentially.

The RelayRecord is far more than a repository of documents. RelayHealth aggregates information from multiple sources as discrete data elements, each tagged with data to identify its source. The RelayRecord includes the following information:



- Patient Information
- Physicians
- Allergies
- Conditions
- Medications
- Immunizations
- Procedures
- Family Health History
- Results
- Clinical documents
- Documents

This repository is based on industry-standard interoperable terminology and validated data representations, including UMLS, SNOMED, LOINC, ICD9, and CPT.

Aside from community connectivity, the RelayRecord is also populated with data from third-party sources. RelayHealth integrates medication history aggregated from pharmacies by SureScripts. A patient can connect her RelayHealth account to her Microsoft HealthVault account to load the RelayRecord with blood glucose data loaded into HealthVault from a device. RelayHealth and Microsoft will be expanding this to enable bi-directional exchange of the entire health record. Similiarly, RelayHealth has a relationship with Google to connect the RelayRecord with Google Health's consumer PHR.

3. Provider Index and Directory

The HIE Services Stack includes a Provider Index and Directory, with a full directory of participating providers as well as access control levels, for utilization by HIE members. Additionally, this Provider Index and Directory interfaces with the National Provider Index (NPI), as well as NHIN core services that support provider directories, provider indexes, and NPI services.

4. Standards Based

The HIE Services Stack utilizes many standards and profiles, and is IHE certified. Some of our standards and profiles we have adopted include SOAP, CCD, XML, and include:

•OASIS SAML 2.0
•OASIS WS-BaseNotification 1.3
•OASIS 42xtended Access Control Markup Language (XACML) 2.0
•HITSP/TP-20 & TP-30
•IHE IT Infrastructure(ITI)- Technical Committee White Paper – Publish/Subscribe Infrastructure for XDS.b
•IHE ATNA (Audit Trail and Node Authentication) profile
•IHE ITI XCA (Cross Community Access) profile
•IHE ITI XDS (Cross Document Sharing) profile
•OASIS/ebXML Registry Information Model (RIM) v3.0 and Registry Service(RS) v3.0
•HL7 V3 Patient Identifier Cross-Reference (PIXV3) & Patient Demographic Query (PDQV3) Profile
•HITSP/TP22 Patient ID Cross-Referencing Transaction Package
•NHIN Cooperative Specifications
•HL7 CDA R2 (With HITSP/C32 Extensions)
•HL7/ASTM Continuity of Care Document (CCD)
•NHIN Core Content Specification for Exchange of the Summary Patient Record)
•HITSP/C32: Summary Documents Using HL7 CCD Component

Additionally, the RelayRecord repository is based on industry-standard interoperable terminology and validated data representations, including UMLS, SNOMED, LOINC, ICD9, and CPT.

5. Privacy, Security, Single Sign-On and Patient Consent Management

MEDNET and the HIE Services Stack are fully compliant with all HIPAA regulations, and utilize standards based security mechanisms, including PKI (Public Key Infrastructure) encryption technologies. Industry-proven PKI technologies have been adopted to ensure data security and integrity by encrypting each and every message. Thus, the utilization of PKI ensures authenticity and non-repudiation of data by digitally signing each and every message.

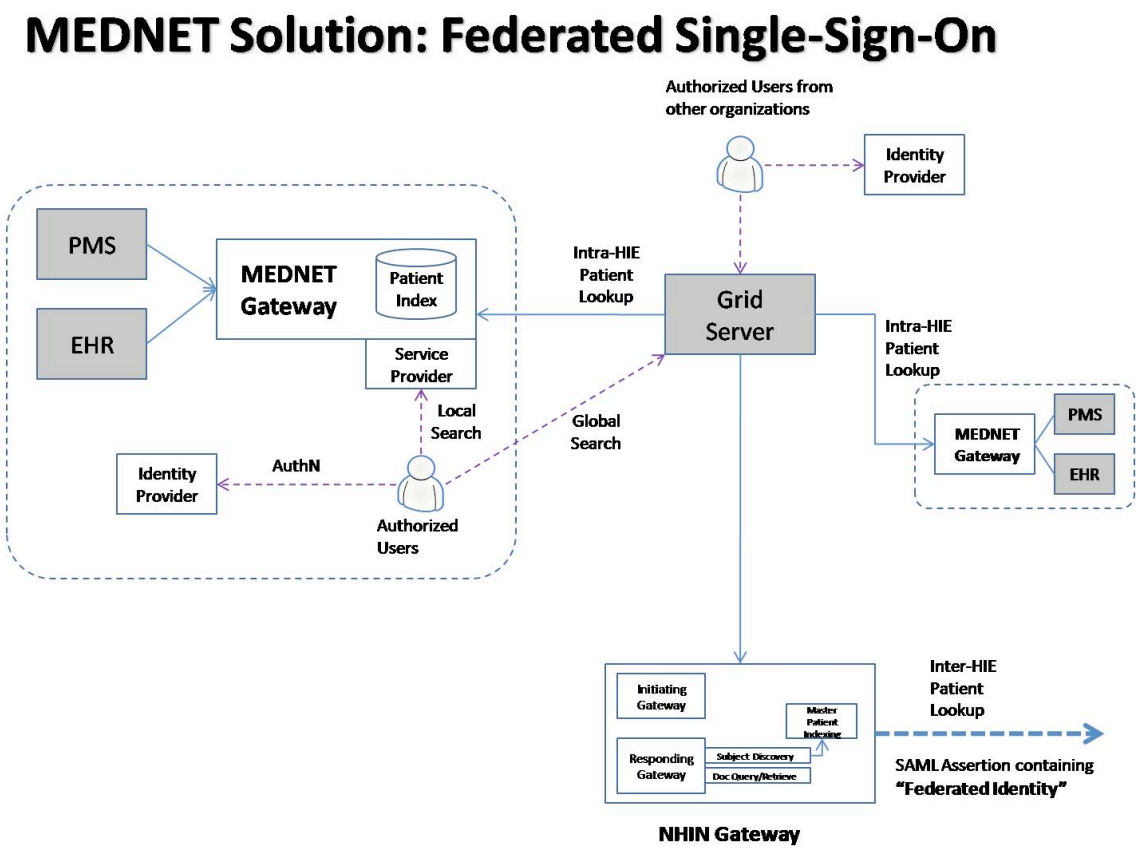
Utilizing the MEDNET Federated Identity Management Service, along with Role-Based Access Control (RBAC) framework, information and data can now be shared across wide area security domains. Additionally, MEDNET's consent management architecture allows for patients to opt-in/opt-out of the MEDNET Patient Lookup Service (Record Locator Service and HIE Services Stack), to fully comply with state opt-out laws (note: The MEDNET consent management architecture is fully deployed in Minnesota, and is in full compliance with Minnesota opt-out law(s), one of the strictest state opt-out laws to date).

Integration with the MEDNET Federated Identity Management System, with Public Key Infrastructure and Role-Based Access Control, allows for interoperable clinical data exchange globally, with management retained locally.

MEDNET Federated Single Sign On

There are four components which enable the federated identity management: 1) Community Identity Provider, 2) Community Service Provider, 3) Role Based Access Control Service, and 4) Community Directory Management Service. Community Identity Provider and Service Provider are the two core relying parties that exchange security statements (SAML Assertion statements) with each other. A federated identity for a user is created and managed by the coordination of authentication handler and attributed query handler. The user directory contains users' various identity information (attributes). There are two subcomponents inside the community SP: federated ID consumer and attribute query requestor. These two components interacts with subcomponents of IdP and make an initial access control decision and provide processed identity information to another subcomponents such as RBAC service for further, fine grained access control.

Figure 6: MEDNET Single-Sign-On Architecture



Key features of MEDNET Federated Identity Management Solution

1. OASIS SAML 2.0 compliant
2. Supports various authentication mechanisms including X.509 V3 digital certificate based user authentication
3. Support fine grained access control (RBAC service)
4. Supports High or Very High Assurance Level Identity Credentials
5. HSPD-12 and FIPS201 compliant
6. Health Information Privacy and Portability Act (HIPAA) Compliant
7. Integrating the Healthcare Enterprises (IHE) compliant: IHE Audit Trail Node Authentication (ATNA) profile and Cross User Authentication (XUA) profile compliant
8. Support Reporting of audit trails to providers and patients
9. Multi-level role based community directory management service
10. Fully implemented ISO 21091 – "Directory Service for security, communications and identification of professionals and patients"

Every activity, including both human and information system activity, is logged in the MEDNET audit log repositories at multiple levels for security review and auditing (MEDNET audit logging subsystem is IHE compliant and certified). The MEDNET audit log includes details such as access to personal health information (PHI), authentication, authorization, log-in/log-out, PHI export/import, etc.

Public Key Infrastructure (PKI) and Security

The Internet is widely used as a common backbone for business, research and healthcare; thus more and more software applications are deployed as SaaS, or as Software as a Service. The Internet, as a best-effort public network, requires SaaS maintain a certain level of security capabilities to protect against any threats to the communication or integrity of information. In the healthcare vertical, since patient privacy is one of the most critical issues, personal health information (PHI) needs to be protected effectively with the highest level of security capabilities. Many technologies have been developed and adopted to address security issues when using the Internet, including PKI, or Public Key Infrastructure. MEDNET adopted Public Key Infrastructure (PKI) to ensure a standard based, secure, encrypted exchange of sensitive clinical information across healthcare networks.

Public key Infrastructure (PKI) and X.509 Certificate

PKI is a set of network services that supports 1) creation of a public and private cryptographic key pair via a trusted authority, 2) management (distribution and revocation) of an asymmetric cryptography key pair, 3) security of transmitted data and 4) validation of end-users and end-systems. X.509 is the standard deployment of Public Key Infrastructure (X.509 digital certificates). MEDNET utilizes these PKI mechanisms to 1) create secure networks over the unsecure public Internet, 2) to ensure the integrity and confidentiality of PHI exchanged across networks and 3) to ensure authorized access to PHI by validating a users' identity. Among other capabilities that PKI provides, MEDNET utilizes the following:

1) *[Authentication]* Validating the identity of end systems and users ("verifying they are who they say they are") through the digital signature mechanism. MEDNET uses X.509 digital certificates for user authentication and client system authentication.
2) *[Integrity]* Assuring the message integrity ("the transferred message has not been compromised in any way from the original message") through the digital signature mechanism. MEDNET digitally signs every message exchanged across healthcare systems.
3) *[Confidentiality]* Ensuring the confidentiality of the message ("only the intended recipient can read the message") through message encryption. MEDNET ensure that every message and electronic clinical document is encrypted before transfer.

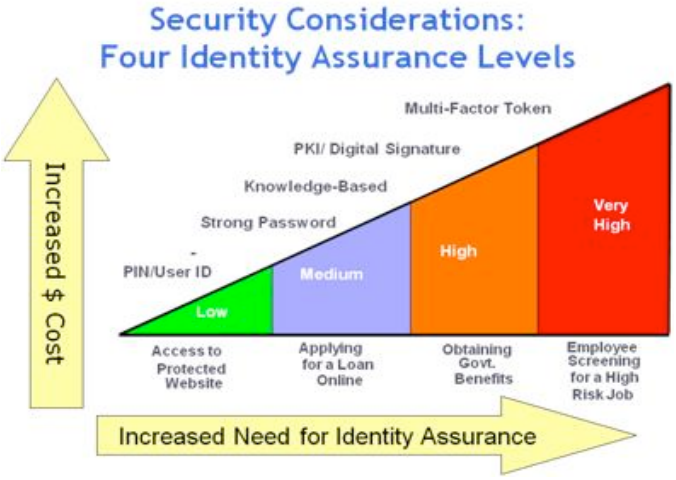
4) *[Non-repudiation]* Ensuring the uniqueness and originality of trading partners ("the transferred message has been sent and received by the parties claiming to have sent and received the message) through the digital signature mechanism.

MEDNET and PKI-based Security and Privacy

Industry-proven PKI-based MEDNET Security and Privacy has following features:

High or Very High Assurance Level Identity Credentials Support: (refer to figure 3)

- Medium software MEDNET Digital Certificates
- Supports other 3rd party certificates from a certification authority (CA) which is certified by Federal Bridge Certification Authority (FBCA)



HSPD-12 and FIPS201 compliant: MEDNET is compliant with the requirements of Homeland Security Presidential Directive 12 (HSPD-12) for standardized identification credentials. MEDNET Credentials (software certificates, hardware tokens, or smart cards) comply with Federal Information Processing Standard #201 (FIPS201) including smart card technology, biometrics, and certificate validation.

HIPAA Compliant: MEDNET ensures the privacy of patient health information (PHI) by supporting multi-factor authentication, role-based access control, and auditing.

Section 5.3 Other Features For Consideration

Public Health Reporting and Alerts

Additionally, one differentiator and added value of The Team is our knowledge and focus on alignment of the State Public Health Department with NHIN and the Centers for Disease Control (CDC) for reporting and bio-surveillance, in cooperation with the ONC. The CDC fully supports and endorses NHIN, and, in conjunction with ONC, is encouraging State Public Health Departments to fully participate in the Strategic and Operational Plans, as well as NHIN for connectivity and interoperability. The Team has deep experience working with the CDC and NHIN, and would fully recommend CDC reporting from Public Health is included in the Strategic and Operational Plans, and would be happy to coordinate any necessary conference calls between senior CDC staff and the appropriate Public Health staff and State HIT staff, to insure full alignment for Public Health with CDC. Therefore, it is the Team's recommendation the Public Health reporting and participation on the NHIN for and with CDC is included in the Arkansas Strategic and Operational Plan, as well as Public Health and NHIN to CDC reporting and participation included with SHARE.

Full Interoperability and Compliance with The Nationwide Health Information Network

An important aspect of interoperability is connecting to, and full compliance with, the Nationwide Health Information Network (NHIN) as well as standards from Health and Human Services and the Office of the National Coordinator (ONC) and the Federal Health Architecture (FHA). Adoption of NHIN and HHS/ONC/FHA standards will be an essential element of overall HIE interoperability, and as such, a technical project plan with continued NHIN upgrades (as NHIN and the CONNECT NHIN software are updated quarterly by ONC), connectivity, interoperability, participation (and compliance with HHS/ONC/FHA standards) is critical to SHARE. Installation and continued management and upgrades of a fully compliant NHIN Gateway and standards compliant systems and solutions will ensure that the SHARE can link with other NHIN HIEs.

Full HIE Alignment with MMIS and Medicaid

In our experience in other states, some Medicaid / MMIS systems and agencies are not and have not been integrated into the HIE and HIE offering. It is for this reason that the Team has included Public Consulting Group (PCG), with their many years of experience in State Medicaid, MMIS, and State health agency planning services.

Core Team member Public Consulting Group (PCG) has provided Medicaid consulting experience to more than 40 states, particularly in revenue enhancement and management, system planning and implementation, and technical consulting. In addition we completely understand the interdependencies of the Medicaid Management Information System (MMIS). We will work with the state Medicaid Agency and Medicaid systems and processes to insure Arkansas Medicaid is in full alignment and interoperable with SHARE.

Therefore, we encourage SHARE to include full alignment of the State of Arkansas Medicaid and MMIS systems and associated agencies with SHARE, to insure Medicaid (and MMIS) is not left behind.

Meaningful Use and Provider Outreach

The MEDNET Team is currently one of the leading experts in Meaningful Use. We are currently piloting a program in Florida to help physicians identify and implement EHR technology while satisfying the Meaningful Use requirements for 2011. In addition, we have designed a strategy to assist physicians in remaining compliant with Meaningful Use requirements for 2013 and beyond. We suggest that SHARE consider including provider Meaningful Use training, outreach, planning, and education as part of the SHARE process and HIE.

Addendum: About The MEDNET Team

MEDNET

MEDNET is a software company headquartered in Minneapolis, Minnesota. Founded in 2007 by experts in healthcare technologies, MEDNET specializes in Health Information Exchange (HIE) applications and services, empowering clinicians with real-time access to clinical data shared locally, regionally, and nationally. Our team has HIT experts who have direct, hands-on experience working at the Federal, State, and Local/Regional level.

MEDNET, with HIE-Bridge, an NHIN compliant three state HIE (built by MEDNET and utilizing MEDNET technologies) was awarded the Nationwide Health Information Network (NHIN) Social Security Administration Contract for bi-directional CCD clinical data exchange over NHIN. MEDNET was also recently awarded two HIE - NHIN based projects with the Lewis and Clark Information Exchange, a four state HIE based in Missouri: one project is with the United States Department of Defense (DoD) for HIE to DoD bi-directional clinical data exchange, the other project is an NHIN project with the Centers for Medicare and Medicaid (CMS) for the bi-directional HIE exchange of claims, claim documentation, and claim based information with and to CMS.

MEDNET has developed solutions specifically utilizing NHIN, the MEDNET NHIN Suite of Services. MEDNET has tested and is in full compliance with NHIN standards as well as Federal Agencies such as the Department of Defense, Veterans Administration, CDC, and others. MEDNET is listed as an NHIN Partner/Vendor, as well as a compliant NHIN adopter on the ONC NHIN website at www.connectopensource.org.

MEDNET is uniquely positioned in the healthcare interoperability marketplace with industry leading Health Information Exchange (HIE) solutions, HIE specific applications, and NHIN expertise. MEDNET is one of a few, select vendors to successfully deploy a fully compliant NHIN network interface, with applications, maximizing the capability of the Nationwide Health Information Network. Additionally, MEDNET is a known expert in security, privacy, and Federated Identity Management.

MEDNET's experience includes:

1. Architecting and building an NHIN compliant Health Information Exchange (C.H.I.C. HIE-Bridge HIE), covering three states and more than 3.5 million lives
2. Awarded and implementing contract with Social Security Administration (SSA) for bi-directional CCD clinical data exchange over NHIN with HIE-Bridge HIE, 2010
3. Implementing Department of Defense HIE NHIN based project for bi-directional clinical data exchange project with the Lewis and Clark Information Exchange (LACIE), 2010

4. Implementing Centers for Medicare and Medicaid (CMS) HIE NHIN ESMD project for claim data and claim supplemental information project with LACIE, 2010
5. Technical partner for Strategic and Operational Plans for ONC for the State of North Dakota
6. Office of National Coordinator (ONC) Nationwide Health Information Network (NHIN) Specification Factory Participant on multiple projects, with and for multiple Federal Agencies.
7. ONC NHIN CONNECT Compliant Partner and Participant for and on NHIN, listed on ONC NHIN website www.connectopensource.org (under partner and adopter tab)
8. Centers for Medicare and Medicaid (CMS) NHIN MITA Medicaid Eligibility Specification Team Lead
9. DURSA (Data Use and Reciprocal Support Agreement for NHIN) participant
10. Presented NHIN / Federated Identity Management NHIN based specification at HiMSS Conference, 2010
11. Demonstrated the CMS Medicaid MITA NHIN Specification with CMS and MITA NHIN and ONC/FHA teams at HiMSS Annual Conference, 2010
12. Expertise on the Federal Health Architecture (FHA) and the Nationwide Health Information Network (NHIN), sponsored by the Office of the National Coordinator (ONC)

MEDNET's expertise includes:

- HIE Infrastructure Solutions for building Health Information Exchanges
- Managed service NHIN connectivity - Nationwide Health Information Network
- HIE / NHIN applications, including the MEDNET Patient Lookup Services
- Inter/intra HIE clinical data exchange, including full EMR integration (CCD)
- Enterprise Master Patient Index (eMPI)
- Federated Identity Management with Role Based Access Controls, PKI

RelayHealth

RelayHealth, McKesson's connectivity business, operates as a neutral partner in an open network environment, offering connectivity services and integration among all organizations, systems, and solutions. Its intelligent network is designed to streamline clinical, financial and administrative communication between patients, providers, payors, pharmacies, pharmaceutical manufacturers, and financial institutions. RelayHealth works to accelerate the delivery of high-quality care and improve financial performance through solutions such as online consultation of physicians by patients, electronic prescribing, point-of-service pharmacy claims resolution by payors, pre-visit patient financial clearance by providers, and post-visit provider bill settlement by payors and patients. RelayHealth securely processes more than 12.8 billion financial and clinical transactions annually.

RelayHealth's Clinical Solutions is the leading provider of healthcare connectivity services supporting clinical integration and health information exchange (HIE). What began in 1999 as a facility for secure communications between physicians and their patients, has evolved to become the most robust Software-as-a-Service HIE platform. More than 50 healthcare communities across the country currently rely on RelayHealth's Virtual Information Exchange (Virtual Information Exchange) in support of a more connected and collaborative approach to the delivery of healthcare.

RelayHealth's Financial Solutions enable the reliable, real-time exchange and utilization of financial information among healthcare providers, patients and payors across the country. Its comprehensive portfolio of financial clearance and settlement services improves business performance for hospitals, health systems and physician practices. With reach to over 2,000 hospitals, 200,000 physicians and 1,800 payors, RelayHealth is a national leader in financial connectivity services.

Public Consulting Group

PCG is a privately held consulting firm with over 23 years of consulting service supporting state and local government across North America. PCG brings its wealth of subject matter expertise and understanding of healthcare IT systems. PCG specializes in assisting its customers in the areas of strategic and operational planning, project management, needs analyses, feasibility studies, technology systems and security analyses, disaster recovery and business continuity planning, and procurement support. Established in 1986, PCG is headquartered in Boston, Massachusetts and has offices in 26 U.S. cities and Montreal, Canada.

By focusing on targeted lines of business and building lasting client relationships in the areas of information technology, health and human services, education, and government finance PCG has gained a thorough understanding of the environments in which our clients operate. PCG maintains current knowledge of industry best practices to implement proven solutions and at the same time, maximize our partnerships and investments to explore new and progressive approaches and technologies.

PCG believes that the collective experience of its management staff is the key to its capabilities and ultimate achievements. Many of PCG's consultants have worked in various positions within state and local governments, including health and human services departments, and draw from personal know-how to develop and implement solutions for the challenges that are faced today.

In 2008, PCG acquired Eclipse Solutions to bolster its information technology (IT) service offerings. These IT services comprise technology consulting, including enterprise architecture assessments, project management, procurement support, requirements definition, feasibility studies, application development, management consulting, disaster recovery and business continuity planning, security assessments, and infrastructure support services.

For your engagement PCG, with over 70 IT professionals, brings its large IT system build project management experience to the MEDNET Team. In addition PCG is well versed in quality assurance (QA), independent verification and validation (IV&V), software testing, and security testing. These services will be offered to Arkansas as part of the overall MEDNET Team offering. PCG has completed these types of services for projects with one time development costs totaling in excess of $4 billion.

Many of PCG's clients are public sector agencies; among these are state and county departments of Medicaid, social services, child support, public welfare, mental health, developmental disabilities, public health, state-operated health and human service providers, public and private outpatient facilities, chronic and rehabilitation hospitals, residential facilities, mental health centers, developmental disability centers, and psychiatric hospitals. Unlike many other firms, PCG dedicates itself to the unique and challenging environment of the public sector, which in turn allows for a more insightful and complex approach to

the clients served. PCG has carefully developed this expertise and often calls upon the work completed in other states and counties to strengthen both its project understanding and the development of final products.

PCG is comprised of four lines of business: Information Technology, Health and Human Services, Public Partnerships, and Education. This structure allows PCG to take a broad focus of customer needs. It also allows the firm to assemble multidisciplinary teams when required, taking advantage of the specialized expertise and experience of each practice area to address the multi-dimensional objectives of public sector agencies.

PCG has extensive experience in nearly all 50 states, more than eighty counties and five provinces in Canada.

Hielix

Hielix creates operationally sustainable, open solutions for the challenge of seamlessly exchanging healthcare information. The foundation of the company's success in developing HIE-related services is the Hielix HIE Framework. The Framework is a standardized set of principles that focuses on the role and value each stakeholder brings to an individual health information exchange opportunity.

Over 20 years ago, our founders noticed a serious lack of balance between the technology changes being thrust upon the rest of us and the ability of the people involved to assimilate and cope with the disruptions to their existing work processes. Change is difficult for people even when done correctly. Therefore, our founders created Hielix's holistic HIE Framework. This Framework serves as the platform for a suite of HIE-related services Hielix offers to provide long-term sustainability for HIE / RHIO efforts.

At Hielix, we understand the challenges that HIE planning and implementation may cause in your workplace. We developed our Hielix HIE Framework to better understand the balance needed between technology and operations in any HIE effort. Think of our Hielix HIE Framework as the DNA of your organization. One strand of that DNA represents technology. The other strand represents the people and operational processes impacted by planning and implementing HIE. What connects the two strands are the organizational capabilities of leadership, long-term strategy, financial sustainability, operational outcomes, performance measures, and employee training and education.

The Hielix HIE Framework aligns and integrates these two critical strands to facilitate and enable the successful exchange of electronic health information.

Table 1: Hielix HIE Framework

Technology Integration	Operational Integration
Creates a technology architecture and standards	Engages stakeholders, builds trust and a willingness to participate
Integrates legacy systems with e-Health technology solutions	Identifies the various stakeholder value propositions
Provides clear accountability and responsibility	Prepares consensus based business and financial plans
Follows best practice project management standards	Develops consumer/provider buy-in for HIE
Protects patients privacy and security	Establishes collaborative efforts between diverse stakeholders
Provides technological support for	Assists stakeholders with the practice

local participants transformation process

The Hielix HIE Framework provides a set of activities that help prospective stakeholders guide their decisions in the development and employment of solutions to seamlessly exchange healthcare information.

- The Hielix HIE Framework represents a clearly defined roadmap to identify the specific elements necessary to create a sustainable business model
- Each HIE / RHIO project is unique to the individual stakeholders. Only by using the Hielix HIE Framework is a unique and sustainable business and financial model created that satisfies the wants and needs of each stakeholder.
- Hielix HIE Framework is built from our own hands-on experience creating HIEs in several states
- The Hielix HIE Framework helps each stakeholder understands how their business interests and value propositions are integrated into the final design
- The Hielix HIE Framework aligns the operational realities with technology to provide the most cost effective and robust solution

Hielix has been helping clients be successful for nearly 20 years and in healthcare for the past five. Our operational experience gives the Hielix team the knowledge and experience to openly pursue the HIE model that creates the most value for each stakeholder. Only by being open to the unique business requirements and interests of each stakeholder is it possible to create long term sustainability. Hielix is invested in the individual success of each stakeholder within all HIE solutions. Our professional and personal investment in your success provides us with an opportunity to find the common points of intersection between diverse stakeholders and find the optimal solution.

The MEDNET Team's HIE Experience

The MEDNET Team's actual work experience is unparalleled in the Health Information Exchange (HIE) and Health Information Technology (HIT) industry today. Members of our team have worked on federal, state, regional and local Health Information Technology and Health Information Exchange (HIT / HIE) projects, including but not limited to the Nationwide Health Information Network (NHIN), electronic health records (EHR), Health Information Security and Privacy Collaboration (HISPC), and Meaningful Use / American Recovery and Reinvestment Act (ARRA) Quality measures.

The Team was selected by the State of North Dakota to create their Statewide HIE Strategic and Operation Plan, and is currently working with the State of North Dakota on this project.

The MEDNET Team was selected by the State of Mississippi to create their Statewide HIE Strategic and Operational Plan, and is currently starting this project.

Additionally, the PCG Team has experience with Strategic and Operational Plan Development in multiple states in relation to HIE, as listed below.

State level Health Information Exchange (HIE) experience includes:

1. Arizona – Created their HIE Formation Framework and Participation Guide. These documents enabled the expanded engagement of rural health information exchanges across the state while ensuring overall consistency within each group's planning approach, which maximized interoperability
2. Florida – Lead researcher and author on the State of Florida Strategic and Operational Plan
3. Hawaii – Leading their legal and operational efforts that focused on Hawaii state privacy laws impacting the implementation of the Big Island Health Information Exchange
4. Indiana – Part of the original team that formed the Indiana HIE. As a key team member in the original establishment of this successful HIE, developed governance agreements that were legally binding and resolved issues specific to privacy and security
5. Maryland – Facilitated their statewide privacy and security initiative. During the direction of this project, identified and provided reconciliation assistance to existing state legislation that inhibited effective health information exchange
6. Minnesota – Designed, architected and implemented (including providing strategic and operational planning and development) the

HIE - Bridge Health Information Exchange, an NHIN compliant multi-state HIE

7. New Jersey – Supported the Jersey Health Connect initiative covering health systems and providers in the northern and central New Jersey region in their successful application for the state's health information exchange collaborative funding under ARRA.
8. North Dakota – Leading their efforts to create Statewide HIE Strategic and Operational Plans
9. Wisconsin – Led their HISPC I and II privacy and security initiatives. Actively engaged at both the federal and state levels to provide input and guidance to HISPC I and II, which became the national framework for privacy and security in health information exchange

The Team's Federal experience includes:

1. HISPC I and II, Privacy and Security standards development through the Office of the National Coordinator
2. Office of National Coordinator (ONC) Nationwide Health Information Network (NHIN) Specification Factory Participant for multiple projects; Specification Factory Team lead for Centers for Medicare and Medicaid Services (CMS) MITA Medicaid eligibility specification for NHIN / CMS / ONC and the Federal Health Architecture (FHA)
3. ONC NHIN CONNECT tested and fully compliant partner for the Nationwide Health Information Network, listed on ONC NHIN CONNECT website www.connectopensource.org under partner and adopter tabs
4. DURSA (Data Use and Reciprocal Support Agreement for NHIN) committee participant
5. Awarded and implementing the Social Security Administration (SSA) NHIN CCD based clinical data exchange Contract for HIE
6. Integration of HIEs with multiple Federal Agencies over the Nationwide Health Information Network (NHIN), including the Department of Defense, Centers for Disease Control (CDC) and Centers for Medicare and Medicaid Services (CMS)
7. HiMSS ARRA Ambulatory Physician Workgroup
8. HiMSS Meaningful Use Workgroup
9. HiMSS presentation of the NHIN / Federated Identity

   HiMSS demonstration of the CMS Medicaid MITA NHIN Specification with CMS / ONC / NHIN at the 2010 Annual Conference

Local and Regional HIE experience includes:

1. SunCoast (Sarasota, Florida) HIE
2. Montgomery County (Rockville, Maryland) HIE
3. Tampa Bay (Tampa, Florida) HIE
4. eHealth Ohio HIE (Columbus, Ohio)
5. Lewis and Clark Information Exchange (LACIE) HIE (rural Missouri)
6. Wisconsin Health Information Exchange (Milwaukee and Southern Wisconsin)
7. Community Health Information Collaborative and HIE – Bridge HIE (Duluth, Minnesota)
8. Jersey Health Connect (northern and central New Jersey)

The Team's unique qualifications include:

1. Multiple state HIE experience in both rural and urban exchanges
2. Nationally recognized experts in HIE, Meaningful Use and NHIN / FHA
3. Open systems philosophy
4. Direct, hands-on experience with HIE formation and sustainability
5. Participation in national efforts, policy work and legislation